RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

Friday-April 01, 2005: PR-094, Yellow Quench: File# = 1112380923

Permit ID: **6b-ps1** Timestamp: **13:42:00 +3622022** Beam Permit Fail Timestamp: **13:42:00 +3622024**
QPAControl / Timing Resolver: No faults indicates, Yellow Quench Detector First to trip.
Quench Detector(s) Trip: 6b-qd2, Y6QFQ2_VT, Int. 5, Tq –24, no Auxiliary Trips.
5 Minute: Quench Delay File: 6b-qd2, Y6QFQ2_VT

Beam Loss Monitors (Rads/Hr): High losses in Sector 6 Triplet Region: b6-lm2.2 = 11463.87, g6-lm1 = 3731.17, y6-lm2.1 = 20014.07 where the magnet quenched passing thru to Sector 5, also scattering medium to high losses.

Main Magnet Power Status:
Mains had arrived at Store Energy for about 10 seconds before tripping.
YMDC =1946.40 amps, YQMC = 1876.43 amps

Technical Notes / Sequence of Events:
At 13:42:03, the 6b-qd2-quench detector caused the yellow quench link to trip. The quench detector tripped because of a real magnet quench at Y6QFQ2_VT. The beam permit tripped after the quench link. There was one real magnet quench in the Sector 6 Triplet Region at magnet y6q2. High beam losses where seen at g6-lm1 and y6-lm2.1. There was no indication of a power supply fault. There are now 31 beam induced quench for the Fy05 Run. -G. Heppner [yellow] [quench]

Physics / MCR Logs: 13:43 QLI in flattop yellow. We only had 2.5e11 in each ring at the time, in six Bunches. We'll investigate root cause, and recover. -TJS, JAK, NPL, JLN 13:45 Restarting event-monitoring sequencer on acnlin92 since there was no elog indication of the QLI. –TJS 13:49 Yellow Beam started dropping out about 800 ms before the permit pull, and looks like a radial motion out of the machine. Perhaps the RF bumps were not quite right, or perhaps they changed the orbit significantly at another corrector and the radius walked rapidly. –TJS 13:53: This large bump might cause considerable tune shift also. –VP 13:57: Definitely real beam-induced quenches in 6 and 8 o'clock. It's likely that the radius moved dramatically. We'll check RF indicators and revert the yellow RF bumps. -TJS, JLN, JBBW 13:58 Loss monitor thresholds change at 200 s into the ramp, also when we were trying to switch the RF to linked hold. Beam was lost here at 140s (at t140) into the ramp. We should probably move the BLM thresholds earlier in the ramp to prevent this type of quench. -TJS, JLN, JBBW 14:06 Done. I just changed the time to 130seconds. -Mei 14:19 Todd, I also need to modify the threshold level for the blms at triplet. Please wait for me. Thanks. -Mei 14:30 I am done. I lowered the threshold level at all the Q1s in IP6&8 by a factor of 2(2000rad/hr). The new table is just loaded. So, as far as blm concern, we are good to go. -Mei

QLI Recovery TAPE Start: **14:01:57** Link Recovered Time: **14:10:57** Estimated Down Time: **29** minutes

Quench Analysis: Beam Induced Quench #031
(Counter = Beam Induced)

RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

***Sunday-April 03, 2005*: PR-095, Blue Quench: File# = sh3_K#04031605**
Permit ID: **4b-time.A / 4b-time.B (In the Pink)** Timestamp: **13:32:52** Beam Permit Fail Timestamp: N/A
QPAControl / Timing Resolver: No faults indicated, Blue PM-QLI first to trip.
Quench Detector(s) Trip: No FEC/DSP HS (on all Quench Detectors)
DX Heaters: All 24 Units to OFF (Fired)
5 Minute: Quench Delay File: No FEC/DSP HS (on all Quench Detectors)
Beam Loss Monitors (Rads/Hr): Unknown (No Data)
Main Magnet Power Status: Unknown (No Data)

QLI Recovery TAPE Start: Multiple Tries until success at **21:00:33**
Link Recovered Time: **21:10:20** Estimated Down Time: **457** minutes

Quench Analysis: No 720Hz due to faulty Controls VME Bucket
(Counter = Controls Related)

***Sunday-April 03, 2005*: PR-095, Yellow Quench: File# = sh3_K#04031605**
Permit ID: **4b-time.A / 4b-time.B (In the Pink)** Timestamp: **13:32:52** Beam Permit Fail Timestamp: N/A
QPAControl / Timing Resolver: No faults indicated, Yellow PM-QLI first to trip.
Quench Detector(s) Trip: No FEC/DSP HS (on all Quench Detectors)
5 Minute: Quench Delay File: No FEC/DSP HS (on all Quench Detectors)
Beam Loss Monitors (Rads/Hr): Unknown (No Data)
Main Magnet Power Status: Unknown (No Data)

Technical Notes / Sequence of Events: Busy day, read the following Physics / MCR Logs statement below. *G Heppner*

Physics / MCR Logs:
2005-Apr-03 18:45:12 Summary: Polarized proton setup proceeded throughout much of this shift. BLIP ran for 11 hours during the shift. Work in RHIC was hampered by a quench in both the blue and yellow rings that appears to have occurred because of a failed power supply in the cfe-4b-time VME chassis. The loss of the power supply for the chassis caused a loss of the 720 Hz event signal and disrupted timing for the both the RHIC and the AGS, causing permit and quench link interlocks and causing a loss of corrector control in the AGS. The VME failure required that the chassis be replaced. CAS performed this work, restoring cfe-4b-time to operation. Cryo also recovered during this time, however, repeated attempts to recover the quench link for blue were unsuccessful. W. Louie, G. Ganetis, and C. Schultheiss were contacted for assistance, and, as of the end of the shift, both Carl and George are working to diagnose and restore RHIC to operation.

2005-Apr-03 23:46:51 Summary: Machine development was off for most of the shift with the controls failures from earlier in the day. The issues were resolved when controls hardware personnel came in and made changes to the jumper settings for cfe-4b-time.B. Quench recovery followed and a bad qpa was found for one of the RHIC trim quads; CAS replaced the qpa. During the following hysteresis ramp the reference for the yellow trim quads began oscillating and caused a QLI that is still under investigation. BLIP ran all shift. H11 DC bump tripped once this shift.

QLI Recovery TAPE Start: **21:10:29** Link Recovered Time: **21:27:23** Estimated Down Time: **475** minutes
Quench Analysis: No 720Hz due to faulty Controls VME Bucket
(Counter = Controls Related)

RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

Sunday-April 03, 2005: PR-096, Yellow Quench: File# = 1112584822

Permit ID: **5b-ps1** Timestamp: **23:20:20 +2773422** Beam Permit Fail Timestamp: **23:20:20 +2773424**
QPAControl / Timing Resolver: N/A
Quench Detector(s) Trip: 5b-qd1, Y4QBA3_A2VT, Int. 100, Tq –23
5 Minute: Quench Delay File: No indications, all systems running.
Beam Loss Monitors (Rads/Hr): No beam in the machine. Several monitors indicate what looks like leftover residue.
Main Magnet Power Status: Qdplots Time is 22:20:23 and indicates mains ramping to Store Energy.
Trip at: YDMC = 1173.58 amps, YQMC = 1709.60 amps.

Technical Notes / Sequence of Events:
Apr-04-2005 00:03: Yellow quench link trip was caused by 5b-qd1 quench detector. The quench detector tripped because of a large offset voltage in signal Y4QBA3_A2VT. It looks like the quench detector had its signal offset value for this channel changed. This happened after the loss of the 720 Hz Event. -Ganetis [quench]

Physics / MCR Logs: 23:20: Running hysteresis cycle. -TJS, PH, CJS
23:50: George has to trip both links to zero out calibration data in quench detectors, as some got bogus numbers in today's fiasco. We will have to recover both mains, but should not have to retrain sextupoles before another attempt at a hysteresis ramp. -TJS

QLI Recovery TAPE Start: **23:59:34** Link Recovered Time: **00:07:03** Estimated Down Time: **47** minutes
Quench Analysis: Quench Detector Reprogramming due to 720Hz Signal Loss.
(Counter = Quench Detector)

Sunday-April 03, 2005: PR-097, Blue Quench: File# = 1112586275

Permit ID: **10a-ps3.B** Timestamp: **23:44:32 +3195004** Beam Permit Fail Timestamp: **23:20:20 +2773424**
QPAControl / Timing Resolver: No faults indicate, BO1, blue Permit Modules, QLO first to trip (Controls)
Quench Detector(s) Trip: No trips, all Systems running.
5 Minute: Quench Delay File: No indications, all systems running.
Beam Loss Monitors (Rads/Hr): No beam in the machine.
Main Magnet Power Status: Zero Current.

Technical Notes / Sequence of Events: Quench Detector Software re-loaded. *G Heppner*

Physics / MCR Logs:
23:50: George has to trip both links to zero out calibration data in quench detectors, as some got bogus numbers in today's fiasco. We will have to recover both mains, but should not have to retrain sextupoles before another attempt at a hysteresis ramp. -TJS

QLI Recovery TAPE Start: **23:50:44** Link Recovered Time: **23:58:40** Estimated Down Time: **47** minutes
Quench Analysis: Quench Detector Reprogramming due to 720Hz Signal Loss.
(Counter = Quench Detector)

RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

Monday-April 04, 2005: PR-098, Yellow Quench: File# = 1112612145

Permit ID: **10a-ps3.A** Timestamp: **06:55:44 +1810742** Beam Permit Fail Timestamp: **06:55:44 +1810743**
QPAControl / Timing Resolver: No faults indicates, Yellow Quench Detector First to trip.
Quench Detector(s) Trip: 10a-qd2, Y10QFQ1_VT, Int. 1, Tq -37
5 Minute: Quench Delay File: No indications, all systems running.
Beam Loss Monitors (Rads/Hr): Appears to be a Normal Beam Dump in Sectors 9 and 10.
Main Magnet Power Status: Steady at Injection Currents: YDMC = 473.17 amps, YQMC = 454.41 amps.

Technical Notes / Sequence of Events:
11:37: Yellow quench link trip was caused by 10a-qd2 quench detector. The quench detector tripped because of a large change in the current signal of YI10-QF1-PS. There was also a large change in the current signal for YI10-QD2-PS. The post mortem plots of p.s. currents do not show these large current changes. It looks like it is a problem with the 4 to 20 ma card of the quench detector. This card should be replaced. -Ganetis [quench]

There was no indication of a power supply at fault. However, Qdplots showed signal spikes for power supplies yi10-qf1 and yi10-qd2. See Quench Event PR-100 for Actual Cause. *G. Heppner*

*Physics / MCR Logs*06:58: Even though there is only 1 bunch in each ring, there are some pet pages that think there are still 6 bunches. I don't know if this is a sign that other & more important things are not being updated with fresh data. -BvK
06:50: Found negative chromaticity settings in blue. changed all to the value of the first stone (+2). Still no explanation for the yellow tune change. pscompare shows that both ramps are identical I will just increase the tune in yellow. -jorg

QLI Recovery TAPE Start: **07:17:02** Link Recovered Time: **07:24:22** Estimated Down Time: **29** minutes
Quench Analysis: Quench Detector 4-20ma Card
(Counter = Quench Detector)

Monday-April 04, 2005: PR-099, Yellow Quench: File# = 1112623966

Permit ID: **10a-ps3.A** Timestamp: **10:12:44 +2788040** Beam Permit Fail Timestamp: **09:20:28**
QPAControl / Timing Resolver: No faults indicates, Yellow Quench Detector First to trip.
Quench Detector(s) Trip: 10a-qd2, Y10QFQ2_VT, Int. 1, Tq -24
5 Minute: Quench Delay File: No indications, all systems running.
Beam Loss Monitors (Rads/Hr): No Beam in the machine.
Main Magnet Power Status: Steady at Injection Currents: YDMC = 473.17 amps, YQMC = 454.41 amps.

Technical Notes / Sequence of Events: Yellow quench link trip was caused by 10a-qd2 quench detector. The quench detector tripped because of a large change in the current signal of YI10-QD2-PS. There was also a large change in the current signal for YI10-QF1-PS. The post mortem plots of p.s. currents do not show these large current changes. It looks like it is a problem with the 4 to 20 ma card of the quench detector. This card should be replaced. -Ganetis [quench]

George had Don who in turn called Joe who replaced a Buffer Card for as per George's diagnostics for yi10-qd2-ps. MCR called, unable to bring the link up, I got called. Supply Control Bucket left in Local, Joe went back out, put the unit in remote, MCR now happy! Still no indication of a power supply at fault, Qdplots still showed signal spikes for power supplies yi10-qf1 and yi10-qd2. See Quench Event PR-100 for Actual Cause. *G. Heppner*

Physics / MCR: We had a QLI. George's initial analysis was that it is yi10-qd2 power supply. Don had replaced a buffer card. Then the QLI was recovered. As we were bringing the magnets to injection George called. He said that his previous analysis was wrong about yi10-qd2 power supply. The actual problem is in the quench detector and a card needs to be replaced. It will take an hour. At the same time I am letting PHENIX have their 45 min access. -Sanjee

QLI Recovery TAPE Start: **10:42:48** Link Recovered Time: **11:09:39** Estimated Down Time: **57** minutes
Quench Analysis: Quench Detector 4-20ma Card
(Counter = Quench Detector)

RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

Monday-April 04, 2005: PR-100, Yellow Quench: File# = 1112629181
Permit ID: **10a-ps3.A** Timestamp: **11:39:40 +1320447** Beam Permit Fail Timestamp: **11:23:00 +2042061**
QPAControl / Timing Resolver: No faults indicates, Yellow Quench Detector First to trip.
Quench Detector(s) Trip: 10a-qd2, No FEC/DSP HS, Y1QFQ3_VT, Int. 1, Tq -24
5 Minute: Quench Delay File: N/A
Beam Loss Monitors (Rads/Hr): No Beam in the machine.
Main Magnet Power Status: Ramping down from Injection, YDMC = 195amps, YQMC = 193amps

Technical Notes / Sequence of Events: Quench Events PR-098, PR-099 and now this event where all caused by the 4-20ma Quench Detector Card that had to be replaced. In the 10a-qd2 Quench Detection Rack. *G. Heppner*

Physics / MCR: We had a QLI. George's initial analysis was that it is yi10-qd2 power supply. Don had replaced a buffer card. Then the QLI was recovered. As we were bringing the magnets to injection George called. He said that his previous analysis was wrong about yi10-qd2 power supply. The actual problem is in the quench detector and a card needs to be replaced. It will take an hour. At the same time I am letting PHENIX have their 45 min access. -Sanjee

QLI Recovery TAPE Start: **12:05:12** Link Recovered Time: **12:13:26** Estimated Down Time: **36** minutes
Quench Analysis: Quench Detector 4-20ma Card
(Counter = Quench Detector)

Monday-April 04, 2005: PR-101, Blue Quench: File# = 1112646311
Permit ID: **7b-ps1** Timestamp: **16:25:08 +3925218** Beam Permit Fail Timestamp: **16:25:08 +3925218**
QPAControl / Timing Resolver: N/A
Quench Detector(s) Trip: 7b-qd1, B6DSA4_A3VT, Int. 100, Tq –24
5 Minute: Quench Delay File: No indications, all systems running.
DX Heaters: None fired.
Beam Loss Monitors (Rads/Hr): Sector 10 appears to be left over residue? Sector 9 No Beam.
Main Magnet Power Status: Steady at Store Energy, approximately at T-8.12 seconds prior to T = zero, Mains are ramped down, tripping at the following currents: BDMC = 1915.67 amps, BQMC = 1845.33 amps

Technical Notes / Sequence of Events: The 7b-qd1-quench detector caused the blue quench link to trip. Voltage tap B6DSA4_A3VT tripped the quench detector first. The ramp was too fast causing multiple taps to exceed their tuned thresholds. There was no indication of a power supply fault. *G. Heppner*

Physics / MCR:
16:30 Ok, my mistake. Used the regular "Down" sequence instead of RotDown. -CM

2005-Apr-04 16:25:00 a blue QLI occurred when the down sequence opposed to the rot down sequence was inadvertently utilized. (The rot3 opposed to the pp21 ramp was loaded, so the wrong slow factor was used.)

QLI Recovery TAPE Start: **16:38:21** Link Recovered Time: **16:47:51** Estimated Down Time: **23** minutes
Quench Analysis: Wrong Ramp Program Used.
(Counter = Operator Error)

RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

Monday-April 04, 2005: PR-102, Yellow Quench: File# = 1112646754

Permit ID: **7b-ps1** Timestamp: **16:32:32 +2664316** Beam Permit Fail Timestamp: **16:25:08 +3925218**
QPAControl / Timing Resolver: N/A
Quench Detector(s) Trip: 7b-qd1, Y6DSA4_A3VT, Int. 100, Tq -24
5 Minute: Quench Delay File: No indications, all systems running.
Beam Loss Monitors (Rads/Hr): No Beam in the machine.
Main Magnet Power Status: Steady at Store Energy, approximately at T-3.86 seconds prior to T = zero, Mains are ramped down, tripping at the following currents: YDMC = 1922.83 amps, YQMC = 1857.19 amps

Technical Notes / Sequence of Events: The 7b-qd1-quench detector caused the yellow quench link to trip. Voltage tap Y6DSA4_A3VT tripped the quench detector first. The ramp was too fast causing multiple taps to exceed their tuned thresholds. There was no indication of a power supply fault. *G. Heppner*

Physics / MCR:

2005-Apr-04 16:32:00 a yellow QLI occurred once the correct rot down sequence was issued. The yellow mains had ramped to park and back to top energy when the wrong down ramp was first used. D. Bruno reported that the yellow QLI could be associated with the mains being off hysteresis.

16:56 this is the 3rd time of operation errors related to rotator ramp. We will eventually merge the two ramps so no confusions. But for now, Todd is going to take a look at the Sequencer to put in protections to prevent this from happening in the future. -Mei

QLI Recovery TAPE Start: **16:50:41** Link Recovered Time: **16:58:18** Estimated Down Time: **25** minutes

Quench Analysis: Wrong Ramp Program Used.
(Counter = Operator Error)

Monday-April 04, 2005: PR-103, Yellow Quench: File# = 1112652310

Permit ID: **8b-ps1** Timestamp: **18:05:08 +2924778** Beam Permit Fail Timestamp: **18:05:08 +2924780**
QPAControl / Timing Resolver: No faults indicates, Yellow Quench Detector First to trip.
Quench Detector(s) Trip: 8b-qd2, Y7QFQ3_VT, Int. 5, Tq -24
5 Minute: Quench Delay File: 8b-qd2, Y7QFQ3_VT
Beam Loss Monitors (Rads/Hr): High losses in Sector 7 Triplet Region: g7-lm-srt.w = 1281.71, y7-lm-srt.w = 4611.57, y7-lm3.2 = 45308.29, y7-lm3.1 = 22669.04 and then carrying thru to Sector 8: y8-lm2.1 = 6233.26, y8-lm3.1 = 2421.20
Main Magnet Power Status: At Store Energy YDMC = 1946.42 amps, YQMC = 1877.24 amps.

Technical Notes / Sequence of Events:
19:37: The 8b-qd2-quench detector caused the yellow quench link to trip. The quench detector tripped because of a real magnet quench at Y7QFQ3_VT. The beam permit tripped after the quench link. There was one real magnet quench in the Sector 7 Triplet Region at magnet y7q3. High beam losses where seen at y7-lm3.2 and y7-lm3.1. There was no indication of a power supply fault. There are now 32 beam induced quench for the Fy05 Run. -G. Heppner [rhic] [quench]

Physics / MCR Logs: 17:57: Why do the YELLOW tunes rise above .70 when they are supposed to be below? On Fulvia's last ramp (6707) they did not show this behavior, and apparently she did not make any tune changes that would explain this. –CM. 18:07: This happened when we tried to measure YELLOW chromaticity. -CM,

QLI Recovery TAPE Start: **18:24:43** Link Recovered Time: **18:32:13** Estimated Down Time: **19** minutes

Quench Analysis: Beam Induced Quench #032
(Counter = Beam Induced)

Unscheduled – Scheduled RHIC Maintenance as the AGS Cold Snake Work Continued.

Scheduled Maintenance 08:00 to 16:00

***Wednesday-April 06, 2005*: PR-104, Blue and Yellow Quench Files:**
File# = **1112800872** Permit ID: **Blue: 10a-ps3.A** Timestamp: **11:21:12 +448665**
Main Magnet Power Status: Park Currents. DX Heaters: None fired.
File# = 1112803445 Permit ID: **Yellow: 10a-ps3.B** Timestamp: **12:04:04 +1949109**

Technical Notes / Sequence of Events: As scheduled work on the AGS Cold Snake for last minute changes and leak checks was to take place, RHIC was supposed to run with a Fill while a Four Hour window was available for Controlled Entry into the AGS Ring. However, due to problems that had occurred during the night, accesses where required into RHIC for repairs. It was then decided to have a declared Maintenance Day. *G. Heppner*

RHIC ps Maintenance Performed today: 1. Corrector bi9-th13-ps was swapped out. 2. Investigated trips of yi10-tq4 and yi10-tq5. We think the problem was a quench detector card and this card was swapped out. 3. There was a problem communicating with the 5b UPS for the 5b quench detector and we found that someone moved the network cable for this UPS and put it in the wrong port. This was fixed. 4. Thermocouples and heaters were added to 2 Cryo pipes on the AGS cold snake. I think these are the helium vent pipes but I am not positive. 5. Two hysteresis ramps were performed before handing the machine back over to MCR. -Don Bruno [rhic] [ps]

Rings restored and returned to Physics: Let the counters Commence once more!

Blue Recovery TAPE Start: **16:16:01** Link Recovered Time: **16:28:40**
Yellow Recovery TAPE Start: **15:13:56** Link Recovered Time: **15:23:02**

Quench Analysis: Scheduled Maintenance
(Counter = Maintenance) Weather conditions: Sunny and Warm.

***Thursday-April 07, 2005*: PR-105, Blue Quench: File# = 1112905697**
Permit ID: **10a-ps3.A** Timestamp: **16:28:16 +1282991** Beam Permit Fail Timestamp: **16:28:16 +1282992**
QPAControl / Timing Resolver: QP10-R10AD4-bi9-dh0-qp, OVC
Quench Detector(s) Trip: All tripped indications of positive Tq Values.
5 Minute: Quench Delay File: None indicated, all systems running.
DX Heaters: None fired.
Beam Loss Monitors (Rads/Hr): Beam Aborted, no causes for this event.
Main Magnet Power Status: Steady at Injection Current before tripping: BDMC = 473.16 amps & BQMC = 453.44 amps

Technical Notes / Sequence of Events:
17:03 This QLI was caused by the qpa for bi9-dh0 tripping on an OVC fault. The p.s. did not show any signs of the current jumping up to cause this over-current if you look at the Postmortems. This was probably caused by a temporary loss of ac power to the qpa. -Don Bruno [blue] [ps quench]

18:50 we checked the ac connections inside the qpa for bi9-dh0. We did not really find anything loose but we reseated the connectors, tightened screws and pushed down on the wires in the insulation displacement connectors. The p.s.'s are now at park and handed back over to MCR. -Don Bruno [blue] [ps]

QLI Recovery TAPE Start: **18:35:54** Link Recovered Time: **18:44:27** Estimated Down Time: **137** minutes
Quench Analysis: bi9-dh0-qp, OVC Fault
(Counter = QPA Fault)

Sunday-April 10, 2005: PR-106 Yellow Quench: File# = 1113106772

Permit ID: **10a-ps3.A** Timestamp: **00:19:32 +353702** Beam Permit Fail Timestamp: **00:19:32 +353703**
QPAControl / Timing Resolver: Yellow Quench Detector first to trip.
QP03-R10AQT4-yi10-tq4-qp, OFF, QP03-R10AQT4-yi10-tq5-qp, OFF
Quench Detector(s) Trip: 10a-qd2, Y10QFQ2_VT, Int. 1, TQ –24, 00:19:33
Auxiliary QD Alarms: 10a-qd2, Yellow Aux 4, Y10TQ5_VT, 00:19:32
5 Minute: Quench Delay File: No indications, all systems running.
MainMagControl 4b-ps3: In the Pink, no data visible.
Beam Loss Monitors (Rads/Hr): Normal Abort at 10 Dump Station, Magnets in question, Loss Spikes occur at and after T=zero containing: y10-lm3 = 60.22, y10-lm4 = 4697.58, b10-lm4 = 4973.98, g10-lm5 = 2292.82
Main Magnet Power Status: Steady at Store: YDMC = 1946.42 amps, YQMC = 1877.40 amps

Technical Notes / Sequence of Events: 10a-qd2-quench detector caused yellow quench link trip. The quench detector tripped because of a large change in the current signal of YI10-QF1-PS. There was also a large change in the current signal for YI10-QD2-PS. The post mortem plots of p.s. currents do not show these large current changes. This Quench Event is similar to PR-098 where there was a problem with the 4 to 20mA card of the quench detector. That card was replaced with a brand new card (Card 8) and the original card ended up in (Card10) which contains the two channels for Yi10-tq4 and Yi10-tq5. It is Possible that the original card is still contaminated or a problem may still exist within the 10a-qd2 quench Detector Bucket. Note, this bucket is located at the bottom of the rack where dirt can accumulate. *G. Heppner*

Physics / MCR Logs: 2005-Apr-10 00:22:38: We encounter a quench link interlock during attempt to setup for the overnight physics store. The QLI originates in 10a-ps3. No power supplies were moving at the time of the quench. We also notice that cfe-4b-ps4 shows a No heartbeat alarm. This front end has DX heater and QPA controls. However, the quench appears to be real (Tq < 0) and unrelated to the 4b front-end.

Apr-10-2005 00:28 QED says that Yellow PSAll has nothing to report and that the blue mains have quench indications, but it is the yellow magnets that quenched. Additionally we have an alarm for cfe-4b-ps4, which is preventing us from getting information about the Dx heaters there and which will probably hinder the quench recovery sequence. -vhs

Apr-10-2005 00:41 The only BLM's in the rings showing losses over 500 rad/hr are the dump blms and even those only show losses after the abort event. -vhs

Apr-10 00:47:59 Cryo calls to indicate that they see no significant rise in temperatures. We begin quench recovery.

Apr-10-2005 00:51 it looks like the Iref for yi10-tq5-ps go to zero 0.02 seconds before the quench event. -vhs

QLI Recovery TAPE Start: **00:47:09** Link Recovered Time: **00:55:55** Estimated Down Time: **35** minutes
TAPE Recovery for TQ Power Supplies: Last used on April 6, 2005, Yi10-tq4-ps to ON at 01:30:54, Yi10-tq5-ps to ON at 01:31:39. The Main TAPE Recovery must have restored these two supplies.

Quench Analysis: Quench Detector 10a-qd2

(Counter = Quench Detector)

Monday-April 11, 2005: SQ-001; Snake Quench Identified, 9C, File# BAS.1113213592

Operating Currents Qdplots / Snapshot Trip Time:05:59:52 +166
Snake Magnet: bi9-snk7-2.3-psd (raw) = 324.14 amps, Current drops prior to Iref
Quench Recovery: SNAKE TAPE for bi9-snk7-2.3-ps: Start: 06:38:08 End: 06:40:16
Magnet quench: REAL

Operating Currents Qdplots / Snapshot Trip Time:05:59:54 +366
Snake Magnet: bi9-snk7-1.4.psd (raw) = 99.98 amps, Iref drops before Current Change
Quench Recovery: SNAKE TAPE for bi9-snk7-1.4-ps: Start: 06:38:08 End: 06:38:52
Magnet quench: REAL due to perturbation (heat Transfer) 2.05 seconds after bi9-snk7-2.3 quenched.

Operating Currents Qdplots / Snapshot Trip Time:05:59:52 +166
Snake Magnet: yo9-snk7-1.4.psd (raw) = 97.81 amps, Current drops prior to Iref
Quench Recovery: SNAKE TAPE for yo9-snk7-1.4-ps: Start: 06:49:29 End: 06:50:05
Magnet quench: REAL

Operating Currents Qdplots / Snapshot Trip Time: 05:59:52 +166
Rotator Magnet: bi5-rot3-2.3.psd (raw) = 2.84 amps, Current drops prior to Iref
Quench Recovery SNAKE TAPE for bi5-rot3-2.3-ps: Start: 06:34:38 End: 06:35:21
Magnet quench: Not Real

Operating Currents Qdplots / Snapshot Trip Time: 05:59:52 +166
Rotator Magnet: bo6-rot3-2.3.psd (raw) = 3.21 amps, Current drops prior to Iref
Quench Recovery SNAKE TAPE for bo6-rot3-2.3-ps: Start: 06:34:38 End: 06:36:42
Magnet quench: Not Real

Beam Loss Monitors (Rads/Hr: Sector 9 Dump Station appears to have absorbed most of the beam at abort. However, Low Intensity has traveled beyond the normal Q5 magnet with indications to the 9C Snake Magnets. Loss Monitors indicate two spikes per each BLM: (First number is the first spike peak value / second number is the second spike peak value)
The numbers: g9-lm6 = 78.40 / 228.91, g9-lm7 = 190.38 / 92.41, b9-lm7.1-snk = 104.50 / 76.71, y9-lm7.1-snk = 94.86 / 83.80, y6-lm-srt.w = 11.87, g6-lm-srt.w = 26.53.

Physics / MCR Logs: 06:04, while doing the target scan in yellow; we quenched in blue.... –KLF
06:25, bi9-snk7 and yo9-snk7 tripped slightly over 1 second before the main ring QLI occurred. The Post Mortem plots for the main ring supplies show a glitch in the voltage and current about 1.35 seconds before the main link went down. This glitch is seen throughout the entire ring. –jak

Estimated Down Time for all Snake and Spin Rotators to be recovered: **38** minutes

Technical Notes / Sequence of Events: There are no indications of a Power Supply at fault. Even the associated QPA's did not show faults. The Iref did not change on bi5-rot3-2.3 or bo6-rot3-2.3 but there was a sudden drop in power supply current that caused the quench detectors associated with these two magnets to trip them. Quench Detector 9c-qd1 tripped because of a real magnet quench at bi9-snk7-2.3 and yo9-snk7-2.3. There had been Low beam losses prior to T=zero on BLM's at b9-lm7.1-snk and y9-lm7.1-snk. Magnet bi9-snk7-1.4 also quenched 2.05 seconds later due to the transfer of warm gas from the bi9-snk7-2.3 quench. Quench Detector 10a-qd1 then tripped the Blue Link due to a Real Buss Quench at B9QFBU9_7VT in Sector 9 Quad Focus Buss 9-7. Heat transfer of Warm Gas from the bi9-snk7-2.3 and bi9-snk7-1.4 Snake Magnet was the cause of this Buss Quench. This is the first beam induced quench for the RHIC Fy05 Physics Run. *G Heppner*

Quench Analysis: Beam Induced #001 Snake Magnets, Sector 9C

(Counter = Beam Induced Snake)

***Monday-April 11, 2005*: PR-107, Blue Quench: File# = 1113213593**

Permit ID: **10a-ps3.A** Timestamp: **05:59:52 +1534899** Beam Permit Fail Timestamp: **05:59:52 +9807870**
QPAControl / Timing Resolver: No faults indicate, Blue Quench Detector pulled the link
Quench Detector(s) Trip: 10a-qd1, B9QFBU9_7VT, Int. 20, Tq-23
DX Heaters: None fired.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): No beam in the machine.
Main Magnet Power Status: Steady at Store Energy: BDMC = 1946.37 amps, BQMC = 1873.64 amps

Technical Notes / Sequence of Events: The 10a-qd1 Quench Detector brought down the blue link due to a Real Buss Quench at B9QFBU9_7VT, Sector 9 Quad Focus Buss 9-7 because of the transfer of Warm Gas from the bi9-snk7-2.3 and bi9-snk7-1.4 Snake Magnet Quenching SQ-001. *G Heppner*

Physics / MCR Logs: 06:25, bi9-snk7 and yo9-snk7 tripped slightly over 1 second before the main ring QLI occurred. The Post Mortem plots for the main ring supplies show a glitch in the voltage and current about 1.35 seconds before the main link went down. This glitch is seen throughout the entire ring. –jak

QLI Recovery TAPE Start: **06:21:05** *TAPE End: Stop at B9DQPSW, B10DQPSW Set to ON.*
QLI Recovery TAPE Start: **06:44:55** Link Recovered Time: **06:48:39** Estimated Down Time: **50** minutes

Quench Analysis: Buss Quench at B9QFBU9_7VT, Sector 9 Quad Focus Buss 9-7

(Counter = Buss Induced Quench due to Warm Gas Transfer)

***Monday-April 11, 2005*: PR-108, Blue Quench: File# = 1113225852**

Permit ID: **4b-time.B** Timestamp: **09:24:12 +448340** Beam Permit Fail Timestamp: **09:24:12 +448344**
QPAControl / Timing Resolver: Blue Permit Module QLO first to trip
Quench Detector(s) Trip: No indications, all systems running.
DX Heaters: None fired.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): No beam in the machine.
Main Magnet Power Status: BDMC at park current, switch over is seen at –0.643 seconds prior to the trip followed by two large voltage spikes (positive peak value of 23 volts and negative peak value of –435 volts. BQMC at park, appears to start ramping down to zero.
Mains Alarm: Blue Dipole Main: PFN1 Fault, PFN2 Fault

Technical Notes / Sequence of Events: An AC Reset to cfe-4b-ps4, in which the Main Power Supplies VME-PLC Program Codes and Counters are located, caused an unknown condition, causing the Blue Main Dipole to trip on PFN1 and PFN2 Faults. Carl Schultheiss was notified and we worked this one trough together. *G Heppner*

Physics / MCR Logs: 08:21 Nick AC reset cfe-4b-ps4. Nick and Charles will work on a ramp (with polarization measurements at injection and store) during the 8:30 meeting. Haixin is changing targets. -TJS, NAK, CCP
09:25This occurred at park before ramping back up to injection. -TJS 09:30 Cryo sees nothing; Charles is recovering for us and we'll ramp back to injection. We'll also contact Don Bruno to see if he sees any reason for this QLI. -TJS, JBBW, CCP, NAK 09:32 we're holding off until Carl Schultheiss can investigate, since there is a PFN1/PFN2 fault on the blue main dipole power supply. -TJS, JBBW, CCP 10:01 Carl had no insights; we're continuing quench recovery and will work on retuning the pp21 ramp for another iteration. -TJS, JBBW, CCP, NAK
ADDED NOTE: Carl Schultheiss should be contacted when we AC reset these 4b FEC's, as it may scramble communications and create confusing QLI's. -TJS, Carl

QLI Recovery TAPE Start: **09:30:15** Link Recovered Time: **10:06:24** Estimated Down Time: **43** minutes

Quench Analysis: PFN1 and PFN2 Fault, Blue Main Dipole 1004B

RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

(Counter = Mains 1004B)

Monday-April 11, 2005: **PR-109, Yellow Quench: File# = 1113228758**

Permit ID: **4b-time.B** Timestamp: **10:12:36 +2820215** Beam Permit Fail Timestamp: **10:12:36 +2820219**
QPAControl / Timing Resolver: N/A
Quench Detector(s) Trip: No indications, all systems running.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): No beam in the machine.
Main Magnet Power Status: YDMC = 0 amps, YQMC = 0 amps
Yellow Dipole Main: Regulator Error

Technical Notes / Sequence of Events: A discussion with Carl Schultheiss, he explained that the mains will not trip above 5 amps from a control bit however a crash switch or normal power supply fault will bring down the main. This is built in safety device so that if a control bit accidentally were telling the supply to trip off, it would not be able until the supply had been ramped down below 5 amps. In this case, TAPE was initiated and when the supply was ramped to zero, it tripped off. TAPE then did not know of this condition and a Regulator Error fault then occurred. *G Heppner*

Physics / MCR Logs: 10:10:00 Yellow QLI; the yellow mains never came up to 50 amps at park. When the Wfg's ramped to injection the link came down. Carl is investigating. 10:14 we were attempting to recover and ramp back to injection when this occurred. Contacting Carl. We're beginning to suspect that this might be a controls problem. -TJS, JBBW, NAK, CCP 11:04 DSP code by Carl S., ADO by Al Marusic. -Rob 11:08 Carl came in to explain the QLI's from earlier. Blue is still a mystery, but the 4b-ps4 AC reset performed earlier this morning apparently scrambled some communication and created issues with yellow restoration. (Power supplies tripped off below 5A; regulation errors tripped the QLI above 50A.) Carl talked to PFI and has requested that warnings be added to the AC reset for 4b-ps3 and ps4, so Carl can be contacted when these FEC's are AC reset. -TJS, JBBW, Carl

QLI Recovery TAPE Start: **10:26:45** Link Recovered Time: **10:38:03** Estimated Down Time: **25** minutes

Quench Analysis: Regulator Error Fault, Yellow Main Dipole 1004B
(Counter = Mains 1004B)

Monday-April 11, 2005: **PR-110, Blue Quench: File# = 1113249522**

Permit ID: **7b-ps1** Timestamp: **15:58:40 +2098347** Beam Permit Fail Timestamp: **15:58:40 +2098347**
QPAControl / Timing Resolver: N/A
Quench Detector(s) Trip: **7b-qd1, B6DSA4_A3VT, Int. 100, Tq-24**
DX Heaters: None fired.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): No beam in the machine.
Main Magnet Power Status: At Store Current, starting to ramp down when tripping at the following currents:
BDMC = 1915.79 amps, BQMC = 1844.29 amps

Technical Notes / Sequence of Events: There appears to be a slight ripple in the voltage, current and ramping current in the Blue Main Dipole starting at –1.7seconds prior to the trip. Qdplots indicated that the Main Dipole Taps throughout the Ring began to rise at a greater rate then normal. Wrong Ramp used. Verified by calling MCR. *G Heppner*

Physics / MCR Logs: 17:11Blue link trip was caused by 7b-qd1 quench detector. The quench detector tripped because of an incorrect ramp rate. Are the WFG manager limits on ramp slow factors working? Al M. should check this out. -Ganetis from CERN [quench]

17:38 this was generated by accidentally running the Down ramp instead of the RotDown ramp. I've added extra checks to hopefully prevent this in the future. -TJS

QLI Recovery TAPE Start: **16:18:05** Link Recovered Time: **16:25:56** Estimated Down Time: **32** minutes

Quench Analysis: Wrong Ramp Executed

(Counter = Operator Error)

Tuesday-April 12, 2005: PR-111, Blue Quench: File# = 1113249522

Permit ID: **10a-ps3.A** Timestamp: **11:47:32 +922040** Beam Permit Fail Timestamp: **11:47:32 +922041**
QPAControl / Timing Resolver: No indications, Blue Quench Detector first to trip
Quench Detector(s) Trip: 10a-qd1 Main and Auxiliary in the Pink, all others running.
DX Heaters: 10a-ps3.A1, 10a-ps3.A2, 10a-ps3.B1, 10a-ps3.B2: All indicate they Fired
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): Low residue in the Dump Stations, No Beam in the Machine.
Main Magnet Power Status: At Zero Current.

Technical Notes / Sequence of Events: bo6-qd1-ps, Stby-Error, AC Power, Standby, Remote, Quench, and AC Phase. FitReader indicated that cfe-10a-qd1 had failed. MCR took action as you can see below. *G Heppner*

Physics / MCR Logs: 10:51 Quench detector FEC acting up - Nick/Charles looking into that.... - Fulvia
10:56 Looks like we may need to go down to zero to fix it, investigation in progress. -FP YS
11:48 that is for fixing the quench FEC that previously bailed out. -Fulvia

2005-Apr-12 10:58:31 cfe-10a-qd1 no heartbeat alarm. MCR is contacting W Louie.
2005-Apr-12 11:17:41 we are doing one more 6 bunch ramp. When the down sequence reaches park we will go to zero to reset the quench detector fec.
2005-Apr-12 11:45:00 Reset of cfe-10-qd1. Running quench recovery.
2005-Apr-12 11:53:00 Hysteresis ramp.

QLI Recovery TAPE Start: **11:52:31** Link Recovered Time: **12:00:51** Estimated Down Time: **14** minutes

Quench Analysis: Quench Detector cfe-10a-qd1 required AC Reset

(Counter = Quench Detector)

Tuesday-April 12, 2005: PR-112, Blue Quench: File# = 1113353818

Permit ID: **12a-ps1.A** Timestamp: **20:56:56 +2313222** Beam Permit Fail Timestamp: **20:56:56 +2313223**
QPAControl / Timing Resolver: QP05-R12AQD1-bi12-qf9-qp no faults indicated.
Quench Detector(s) Trip: 12a-qd1, B12QDQ9_VT, Int. 1, Tq +1921, all other systems running.
DX Heaters: None fired.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): No Beam in the Machine.
Main Magnet Power Status: At Zero Current.

Technical Notes / Sequence of Events: Difference in Reference and Current (Range Error) for bi12-qf9-ps following times: April 12, 16:55:18, 12 17:32:45, 18:30:03 and 20:29:41. Fiber Optics card replaced for bi12-qf9-ps as per Don Bruno. In doing so, the supply must be turned off and in turn, this will automatically bring the blue link down. *G Heppner*

Physics / MCR Logs: 20:33 I have been watching bi12-qf9-ps. The setpoint is jumping and the current is trying to follow it. It looks to be 2 amp spikes in current that last around 200ms. I suspect the fiber optic interface card. If you need this done give me a call and I can have CAS do it. The other quick thing that can be tried would be to put the p.s. into the OFF state for about 5 minutes. To do either one of these would require bringing the blue link down. -Don Bruno [blue] [ps]
20:43 Clarification: it will pull the quench link

21:00 Operations pulled the quench link so CAS can go and swap out the optics card, per Don Bruno's instructions -Sanjee, CFW, MES [rhic] [ps]

QLI Recovery TAPE Start: **21:21:20** Link Recovered Time: **21:29:01** Estimated Down Time: **32** minutes

Quench Analysis: bi12-qf9-ps, Iref/Current Range Error

(Counter = IR Power Supply)

Wednesday-April 13, 2005: SQ-002; Snake Quench Identified, 3C, File# BAS.1113385594

Operating Currents Qdplots / Snapshot Trip Time: 05:46:34.200
Snake Magnet: yi3-snk7-2.3-psd (raw) = 321.66 amps, Current drops prior to Iref
Quench Recovery: SNAKE TAPE for yi3-snk7-2.3-ps: Start: 06:01:26 End: 06:03:18
Magnet quench: REAL
Operating Currents Qdplots / Snapshot Trip Time: 05:46:34.266
Snake Magnet: yi3-snk7-1.4.psd (raw) = 97.87 amps
Quench Recovery: SNAKE TAPE for yi3-snk7-1.4-ps: Start: 06:01:26 End: 06:02:01
Magnet quench: REAL due to perturbation (heat Transfer)
3C Permit: 05:46:32 +2231550
Beam Loss Monitors (Rads/Hr: Medium loss at b3-lm7.2-snk = 1546.30 and y3-lm7.2-snk = 1530.66

Physics / MCR Logs: 2005-Apr-13 05:25:00 The RHIC spin pattern has been changed to pmpm x ppmm. 2005-Apr-13 05:46:00 the yellow 3 o'clock snake quenched during the yellow injection. 2005-Apr-13 06:04:00 Cryo has given permission to ramp. 2005-Apr-13 06:06:00 Cryo reported seeing temperature increases once Operations started ramping the yellow 3 o'clock snake supplies. Operations is sending the snake supplies back to zero. 2005-Apr-13 06:25:00 Cryo has given permission to ramp the yellow 3 o'clock snake.

Technical Notes / Sequence of Events: 09:43 there are no indications of a Power Supply at fault. The Snake trip was caused by the 3c-qd1 quench detector due to a real magnet quench at yi3-snk7-2.3. There was medium beam loss at y3-lm7.2-snk. Magnet yi3-snk7-1.4 also quenched due to the transfer of warm gas from the yi3-snk7-2.3 quench. This is the second snake beam induced quench for the RHIC Fy05 Physics Run. -*G. Heppner* [yellow] [quench]
Estimated Down Time for all Snake and Spin Rotators to be recovered: **17** minutes

Quench Analysis: Beam Induced #002 Snake Magnets, Sector 3C
(Counter = Beam Induced Snake)

Wednesday-April 13, 2005: PR-113 Yellow Quench: File# = 1113409021

Permit ID: **10a-ps3.A** Timestamp: **12:17:00 +1460099** Beam Permit Fail Timestamp: **12:17:00 +1460100**
QPAControl / Timing Resolver: No Faults, Yellow Quench Detector tripped.
Quench Detector(s) Trip: 10a-qd2, Y10QFQ1_VT, Int. 1, Tq –37
5 Minute: Quench Delay File: No indications, all systems running.
Beam Loss Monitors (Rads/Hr): Beam aborts appear normal.
Main Magnet Power Status: Sitting at Injection Currents, YDMC = 473.17 amps, YQMC = 454.29 amps.
Technical Notes / Sequence of Events: The 10a-qd2-quench detector caused the yellow quench link to trip. The quench detector tripped because of a large change in the current signal of YI10-QF1-PS. There was also a large change in the current signal for YI10-QD2-PS. The postmortem plots of p.s. currents do not show these large current changes. This Quench Event has been is similar to PR-098 and PR-106 where the 4 to 20mA card of the quench detector was replaced. *G. Heppner*

Physics / MCR Logs 12:34 This looks to be the same problem with the 10a yellow quench detector in 1010A that we had on 4/4, 4/6 and 4/10. Wing said he would like to swap out the backplane of the quench detector bucket and these would hopefully fix the problem. This would take approximately 2 hours. We do have a request in for this. The p.s. did not show any problems during this quench but the quench detector tripped because it saw the current jumping on a p.s. There were no real quenches, a more detailed explanation will follow. -Don Bruno [yellow] [quench] 12:39 One slight correction, Wing thinks he can swap a cable, which will take about 20 minutes and that may fix the problem. If that doesn't work we will do the backplane at some later time. This will help us in troubleshooting the problem. -Don Bruno [yellow] [quench]
13:56 Wing swapped out the cable on the yellow 10a quench detector. -Don Bruno [yellow] [quench]

April 20, 2005, A fix! Wing found that the BUSS driver Receiver located on the Fan Fail Card had failed for the 10a-qd2 card swapped out. This was the cause for the following quenches: (PR-084, 098, 099, 100, 106, 111 and 113) Wing Louie. April 20, 2005
QLI Recovery TAPE Start: **13:33:09** Link Recovered Time: **13:42:31** Estimated Down Time: **86** minutes

Quench Analysis: Quench Detector 10a-qd2

(Counter = Quench Detector)
***Friday-April 15, 2005:* SQ-003; Snake Quench Identified, 3C, File# BAS.1113549535**
3C Permit: 03:18:52 +3063033

Operating Currents Qdplots / Snapshot Trip Time: 03:18:53.733
Snake Magnet: bo3-snk7-2.3-psd (raw) = 323.88 amps, Current drops prior to Iref
Quench Recovery: SNAKE TAPE for bo3-snk7-2.3-ps: Start: 06:30:53 End: 06:32:46
Magnet quench: REAL
Operating Currents Qdplots / Snapshot Trip Time: 03:18:56.600
Snake Magnet: bo3-snk7-1.4.psd (raw) = 99.95 amps
Quench Recovery: SNAKE TAPE for bo3-snk7-1.4-ps: Start: 06:30:53 End:06:31:29
Magnet quench: REAL due to perturbation 2.8 seconds later (heat Transfer)

Beam Loss Monitors (Rads/Hr): Clean abort in sector 9 and 10

Physics / MCR Logs:
03:19 A power dip has just occurred. RHIC Blue QLI, STAR magnet power supply, AMMPS & various AGS power supplies have tripped off. 03:24 (for the record, the beam is gone)

Technical Notes / Sequence of Events: A power dip had occurred at 03:18 this morning. The 3c-qd1-quench detector tripped due to a real magnet quench at yi3-snk7-2.3. There were no indications of Beam Losses in this area at the time of the event. Beam Abort did take place in the Dump Stations. Magnet yi3-snk7-1.4 also quenched due to the transfer of warm gas from the yi3-snk7-2.3 quench. This is the first Power Dip induced quench for the RHIC Fy05 Physics Run. -*G. Heppner*
Estimated Down Time for all Snake and Spin Rotators to be recovered: **194** minutes

Quench Analysis: Power Dip Induced Snake Magnet Quench, Sector 3C
(Counter = Power Dip Induced Snake)

***Friday-April 15, 2005:* PR-114, Blue Quench: File# = 1113549535**
Permit ID: **4b-time.A** Timestamp: **03:18:52 +3063005** Beam Permit Fail Timestamp: **03:18:52 +3063006**
QPAControl / Timing Resolver: No faults indicate, Blue Quench Detector pulled the link
Quench Detector(s) Trip: 4b-qd1, B3QFBU9_7VT, Int. 5, Tq -22
DX Heaters: None fired.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): No Beam in the Machine.
Main Magnet Power Status: Steady at Store Energy: BDMC = 1946.37 amps, BQMC = 1874.12 amps

Technical Notes / Sequence of Events: A power dip had occurred at 03:18 in which bo3-snk7-2.3 and bo3-snk7-1.4 magnets quenched at Top Operating Current. Because of this, a flow of Warm Gas from the bi9-snk7-2.3 and bi9-snk7-1.4 Snake Magnet caused a Real Buss Quench at B3QFBU9_7VT, Sector 3 Quad Focus Buss 9-7. This caused the 10a-qd1 Quench Detector to bring down the blue link. *G Heppner*

Physics / MCR Logs: 03:45 Quench recovery script hangs on a quench detector DSP fault. Wing Louie was called at home. He reset the DSP. 04:30 Quench recovery script hangs at a QPA switch fault. Don Bruno was called at home. He is investigating

QLI Recovery TAPE Start: **03:34:39** Problem with Recovery: 10a-qd1, Quench Data Ready (NO).
QLI Recovery TAPE Start: **03:37:55** Problem with Recovery: QP11-R10AD7-bo10-dhx-qp, (3 retries then cancel).
Link Recovered Time: **Did not Recover until 06:30:11** Estimated Down Time: **See PR-115**
Quench Analysis: Power Dip, Buss Quench at B3QFBU9_7VT, Sector 3 Quad Focus Buss 9-7
(Counter = Power Dip)

***Friday-April 15, 2005*: PR-115, Blue Quench: File# = 1113552485**
Permit ID: **4b-time.A** Timestamp: **04:08:04 +1137872** Beam Permit Fail Timestamp: **04:08:04 +1137873**

QPAControl / Timing Resolver: QP06-R4BOFF1-b-qtrim-qp, Fan
Quench Detector(s) Trip: All systems running.
DX Heaters: None fired.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): Low residue readings at Dump Stations, Sectors 9 & 10. No beam in the machine.
Main Magnet Power Status: Zero Currents

Technical Notes / Sequence of Events: Recovering from the power dip that had occurred at 03:18 (PR-114), the link would not recover due to a Fan Fault on QP06-R4BOFF1-b-qtrim-qp. MCR had called Don and after he analyzed the problem, notified CAS but due to shift changes it took longer than usual. Eventually they replaced the air vane switches (Tech Time 36 minutes). *G Heppner*

Physics / MCR Logs:
04:30 Quench recovery script hangs at a QPA switch fault. Don Bruno was called at home. He is investigating.
05:00 Don tells us that the QPA fan switch is faulty. He is instructing the CAS crew on how to change the switch.
05:06 The blue link won't come up because of a qpa fan fault for b-qtrim-qpa. I am e-mailing the CAS crew the location of the procedure for replacing the fan switches. -Don Bruno [blue] [ps]
05:42 CAS crew is starting the fan switch repair. 06:18 The QPA fan repair is complete. We are recovering the quench link.

QLI Recovery TAPE Start: **06:20:00** Link Recovered Time: **06:30:11** Estimated Down Time: **192** minutes
Quench Analysis: QPA Fan Fault, b-qtrim-qpa 1004B
(Counter = QPA Fault)

Scheduled Maintenance 08:00 to 16:00

***Tuesday-April 19, 2005*: *PR-116*, Blue and Yellow Quench Files:**
File# = 1113916544 Permit ID: **Blue: 2b-ps1** Timestamp: **19:15:44 +349875**
Main Magnet Power Status: Park Currents. DX Heaters: None fired.

File# = Yellow was not taken down for Maintenance.

Technical Notes / Sequence of Events: Maintenance Day. *G. Heppner*

RHIC ps Maintenance performed today: 1) Tested AGS beam permit circuit with AGS cold snake p.s.'s. Will want to test this one more time because we might have to make a change. 2) Replaced current regulator card for bo3-snk7-2.3-ps. Found bad relays on it. 3) We did an ac reset on 4b-ps4 to see what effect it had the mains and we learned it does have an effect but more investigation is required. The problem is reproducible. 4) We completed one hysteresis ramp before handing the RHIC p.s.'s back over to MCR. -Don Bruno [rhic] [ps

Blue Recovery TAPE Start: **09:32:19** Link Recovered Time: **09:40:04**

Quench Analysis: Scheduled Maintenance
(Counter = Maintenance) Weather conditions: Sunny and Warm.

***Wednesday-April 20, 2005:* SQ-004; Snake Quench Identified, 9C, File# BAS.1113975321**
Link Status, Permit.9c-ps1 = 01:35:20 +1530768
Snake Quench Permit.9c-ps1 = 01:35:20 +1530729

Yo9-snk7-R2_GL, Int. 1 = 01:35:21.033 Qdplots (324.07 amps)

Operating Currents Qdplots / Snapshot Trip Time:
Yo9-snk7-2.3-ps = Snapshot Time: 01:35:21.049 ***{XX5}*** (324.07 amps)
Quench Recovery: SNAKE TAPE for yo9-snk7-2.3-ps: Start: 04:05:34 End: 04:07:27
Magnet quench: REAL

Operating Currents Qdplots / Snapshot Trip Time:
Yo9-snk7-1.4-ps = Snapshot Time: 01:35:23.700 (97.86 amps)
Quench Recovery: SNAKE TAPE for yo9-snk7-1.4-ps: Start: 04:05:34 End:04:06:09
Magnet quench: REAL due to perturbation 2.149 seconds later (heat Transfer)

Beam Loss Monitors (Rads/Hr): Scattered beam beyond the sector 9 dump station normal levels:
g9-lm9 = 43.39, g9-lm8 = 57.55, y9-lm7.2-snk = 54.77, b7-lm7.2-snk = 52.77, y9-lm7.1-snk = 90.79, b9-lm7.1-snk = 76.85, g9-lm7 = 80.72

Cryogenics Log April 19, 2005:
10:37 Derryberry changed out flow controller at snake magnet Y09HRD -mm
12:01 Snake Y09 flow out of limit again -mm
13:23 Venting LSA Dewar #1 thru CR line -mm
14:18 Turn down test complete. Return to normal running parameters -mm
18:00 Snake lead flow out of spec. Y09 Reset power supply, reset alarm -mm
18:55 Snake Y09 low lead flow, manually raised set pt, then reset –mm

There is no further mention of a problem after the 18:55 entry. In fact, next entry into their log is not until the next morning at 09:23, Wednesday, April 20, 2005. (The Cryo Control Room reports that they are unable to reach the elog or email from the laptop computers in the CCR (108 and 110 subnets). J. Gould is investigating from home.)

Technical Notes / Sequence of Events: The 9c-qd1-quench detector tripped because it detected a Gas Cool Lead Quench at yo9-snk7-R2_GL. A Cryogenic Flow Rate problem for this device (flow had been too low for over an hour) caused the Gas Cooled Lead to heat up and eventually quenched. Note that this device was not replaced. This caused the yo9-snk7.2.3-ps to trip off at operating current causing its magnet to quench. Approximately 2.149 seconds later, the yo9-snk7-1.4 magnet quenched due to perturbation. -G. Heppner [yellow] [quench]

Estimated Down Time for all Snake and Spin Rotators to be recovered: **153** minutes

Quench Analysis: Gas cooled Lead, Improper Flow at FSLY9_SNK7_AB.
(Counter = Cryo Related, Snake)

***Wednesday-April 20, 2005*: PR-117 Yellow Quench: File# = 1113975322**
Permit ID: **10a-ps3.A** Timestamp: **01:35:20 +2904404** Beam Permit Fail Timestamp: **01:35:20 +1530733**
QPAControl / Timing Resolver: No Faults, Yellow Quench Detector tripped.
Quench Detector(s) Trip: 10a-qd2, Y9QDQ8_VT, Int. 5, Tq –24
5 Minute: Quench Delay File: No indications, all systems running.
Beam Loss Monitors (Rads/Hr): Scattered beam beyond the sector 9 dump station normal levels: g9-lm9 = 43.39, g9-lm8 = 57.55, y9-lm7.2-snk = 54.77, b7-lm7.2-snk = 52.77, y9-lm7.1-snk = 90.79, b9-lm7.1-snk = 76.85, g9-lm7 = 80.72
Main Magnet Power Status: Steady at Store Energy. YDMC = 1946.41 amps, YQMC = 1876.72 amps

Technical Notes / Sequence of Events: The 9c-qd1-quench detector tripped because it detected a Gas Cool Lead Quench at yo9-snk7-R2_GL. A Cryogenic Flow Rate problem for this device (flow had been too low for over an hour) caused the Gas Cooled Lead to heat up and eventually quenched. Note that this device was not replaced. This caused the yo9-snk7.2.3-ps to trip off at operating current causing its magnet to quench. Approximately 2.149 seconds later, the yo9-snk7-1.4 magnet quenched due to perturbation. Then, the 10a-qd2-quench detector caused the yellow quench link to trip. The quench detector tripped because of a BUSS quench (Y9QFBU9_7VT) located in the yo9 snake magnet due to heated gas after the yo9-snk7-2.3 and yo9-snk7-1.4 magnets quenched. -G. Heppner [yellow] [quench]

Physics / MCR Logs 02:18 Cryo gives us the OK to recover -Team C
01:51 Two power supplies around nine o'clock showed wiggles before the quench event: yo9-qf8 and yo9-qd9 -Sanjee, MES
14:08 yo9-qf8 and yo9-qd9 are seen moving due to the results of the BUSS quench (Y9QFBU9_7VT) located in the yo9 snake magnet caused by the heated gas after the yo9-snk7-2.3 and yo9-snk7-1.4 magnets quenched. -G. Heppner [yellow] [quench]

QLI Recovery TAPE Start: **02:18:01** Link Recovered Time: **04:01:46** Estimated Down Time: **147** minutes
Quench Analysis: BUSS Quench due to heated gas from the SQ-004 yo9 Snake Quench.
(Counter = Cryogenic Lead Flow)

RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

***Saturday-April 23, 2005*: PR-118, Yellow Quench: File# = 1114270573**
Permit ID: **7b-ps1** Timestamp: **11:36:12 +1948961** Beam Permit Fail Timestamp: **11:32:44, 3183219**
QPAControl / Timing Resolver: N/A, Sextupoles running
Quench Detector(s) Trip: 7b-qd1, Y6DSA4_A3VT, Int. 100, Tq –23
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): Beam aborted prior to the QLI Event. Observations made at the time of the Beam Permit Fail indicate high levels in sector 6: b6-lm3.2 = 2889, y6-lm3.1 = 698 and here is one, b6-lm2.2 at 24543.
Main Magnet Power Status: At Store Energy, YDMC = 1946.34 amps, YQMC = 1878.55 amps
A down ramp was initiated, supplies tripped at YDMC = 1922.91 amps, YQMC = 1855.99 amps.
Ramp Rate at the time of the trip: BDMC = 11.28 amps/sec, BQMC = 10.92 amps/sec

QLI Recovery TAPE Start: **11:54:53** Link Recovered Time: **12:02:25** Estimated Down Time: **27** minutes
Quench Analysis: Wrong Ramp Factor
(Counter = Operations)

***Saturday-April 23, 2005*: PR-118, Blue Quench: File# = 1114270573**
Permit ID: **7b-ps1** Timestamp: **11:36:12 +1965361** Beam Permit Fail Timestamp: **11:32:44, 3183219**
QPAControl / Timing Resolver: N/A, Sextupoles running
Quench Detector(s) Trip: 7b-qd1, B6DSA4_A3VT, Int. 100, Tq -24
DX Heaters: None fired.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): Beam aborted prior to the QLI Event. Observations made at the time of the Beam Permit Fail indicate high levels in sector 6: b6-lm3.2 = 2889, y6-lm3.1 = 698 and here is one, b6-lm2.2 at 24543.
Main Magnet Power Status: At Store Energy, BDMC = 1946.27 amps, BQMC = 1875.57 amps
A down ramp was initiated, supplies tripped at BDMC = 1922.72 amps, BQMC = 1852.94 amps.
Ramp Rate at the time of the trip: BDMC = 11.37 amps/sec, BQMC = 12.75 amps/sec
Real Quench Page: No indications, all systems running.

Technical Notes / Sequence of Events: The blue and yellow link was pulled by the 7b-qd1 quench Detector. The quench detector tripped because of the quick rise in voltage taps B6DSA4_A3VT (1.876mv) and Y6DSA4_AVT (1.888mv), which is a usual indication that the improper ramp rate was used from Store Energy to Injection. Looking at the new Buffer for the wfgman, the reference setpoint for all the main power supplies where set at Injection Current. This would force the mains to ramp quickly. *G Heppner*

Physics / MCR Logs: 11:36, both the yellow and the blue quench links dropped when a down ramp was issued via Sequencer. A hard stop had been utilized during the up ramp in an attempt to prevent the rotators from ramping. 11:52, we triggered a hard stop to prevent the rotators from ramping since we lost the beam before the rotator ramp. We were attempting to save some time by not having to wait for the rotators to ramp up and down before we next filled. When the down ramp was issued, both quench links dropped. When we looked at the wfgman PET page shortly after sending the down ramp, the reference for the mains appeared to be at the injection setting. -jak, mei, npl, cjs

Cryogenics Log April 23, 2005:
10:09 YQ9 snake flow control output alarm (FE-5361). Manually increased flow and set back to auto. Alarm clear. -E.V
11:38 Blue and yellow Quench from top energy. No effect on cryo. -E.V

QLI Recovery TAPE Start: **11:46:48** Link Recovered Time: **11:54:35** Estimated Down Time: **19** minutes
Quench Analysis: Wrong Ramp Factor
(Counter = Operations)

***Saturday-April 23, 2005:* SQ-005; Snake Quench Identified, 3C, File# BAS.1114275755**
Beam Permit, Link Status, Permit.3c-ps1 = 13:02:32 +3768345
Snake Quench Permit.3c-ps1 = Quench-snake permit 3c-ps1 (disabled)

Operating Currents Qdplots / Snapshot Trip Time:
Snapshot Time: bo3-snk7-1.4-ps, 13:25:31.399 (100.07 amps), Last Commands all indicate ON
QPAControl / Timing Resolver: No faults indicated, Quench Detector bit 7 first to initiate.
Beam Loss Monitors (Rads/Hr): No beam in the Machine.
Qdplots: Blue Aux 4, signals: BO3SNK7_4IC-4OC, Int. 1
Ground Currents: bo3-snk7-1.4 = 0.000601 amps/peak
Magnet quench: REAL

Technical Notes / Sequence of Events: Looking at the Snapshot data, The Current and Voltage both drop at the same time while Iref and wfg remained constant. Therefore, the supply was not told to change its status. Qdplots confirms this Current drop and the measurements are as follows: Operating Current of 100.07 amps, a sudden drop to 97.27 amps occurs in 0.033 seconds. This sudden change in current is what caused the 3C Quench Detector to trip the supply. Timing Resolver in 3C also indicated that the Quench Detector tripped the supply. There is no way to determine if there had been an interruption in AC power for the Alcoves. *G. Heppner*

Physics / MCR Logs:12:36 Dumping Beam and ramping down -Sequencer
12:36 Vinny Castillo and Dean McDonald are in to replace NM217. This chipmunk dropped to failsafe mode at 1239. -jak
12:39 Meanwhile, we have been doing a hysteresis ramp since we cannot inject during the chipmunk failure. -jak
13:25 bo3-snk7-1.4 and bo7-rot3-1.4 just tripped to standby fault. -jak
13:45 The bo3-snk7-1.4 supply has been ramped to 100 amps. The bo7-rot3-1.4 rotator and the AGS H10 extraction septum have also been recovered. PHENIX is securing their plug door.

Cryogenics Log April 23, 2005:
10:09 YQ9 snake flow control output alarm (FE-5361). Manually increased flow and set back to auto. Alarm clear. -E.V
11:38 Blue and yellow Quench from top energy. No effect on cryo. -E.V
17:36 snake C2 pressure switch high. -E.V

QLI Recovery TAPE Start: **13:34:01** Link Recovered Time: **13:34:46** Estimated Down Time: **10** minutes
Quench Analysis: Undetermined
(Counter =Other)

***Saturday-April 23, 2005:* SQ-005; Rotator Quench Identified, 7C, File# BAS.1114275755**
Beam Permit, Link Status, Permit.7c-ps1 = 13:02:32 +3768360
Rotator Quench Permit.7c-ps1 = Quench-rotator permit 7c-ps3 (enabled)

Operating Currents Qdplots / Snapshot Trip Time:
Snapshot Time: bo7-rot3-1.4-ps, 13:25:31.399 (3.14 amps), Last Commands all indicate ON
QPAControl / Timing Resolver: No faults indicated, Quench Detector bit 7 first to initiate.
Beam Loss Monitors (Rads/Hr): No beam in the Machine.
Qdplots: Blue Aux 4, signals: BO7ROT3_1IC-1OC, Int. 1
Ground Currents: Bo7-rot3-1.4 = 0.000172 amps/peak
Magnet quench: Real

Technical Notes / Sequence of Events: Looking at the Snapshot data, The Current and Voltage both drop at the same time while Iref and wfg remained constant. Therefore, the supply was not told to change its status. Qdplots confirms this Current drop and the measurements are as follows: Park Current of 3.15 amps, a sudden drop to 2.51 amps occurs in 0.28582 seconds. After 25 seconds of data, the signal indicated 2.13888 amps. (An offset?) This sudden change in current is what caused the 7C Quench Detector to trip the supply. Timing Resolver in 7C also indicated that the Quench Detector tripped the supply. There is no way to determine if there had been an interruption in AC power for the Alcoves. Yi7-rot3-2.3 also showed similar Current / Voltage drops while Iref and wfg remained constant at its Park Current of 0.631 amps. This supply did not trip to Standby as Snapshot indicates it recovered back to its Park Current. QPA Control also indicated that the supply stayed on. (File# 1114277133) *G. Heppner*

Physics / MCR Logs:12:36 Dumping Beam and ramping down -Sequencer
12:36 Vinny Castillo and Dean McDonald are in to replace NM217. This chipmunk dropped to failsafe mode at 1239. -jak
12:39 Meanwhile, we have been doing a hysteresis ramp since we cannot inject during the chipmunk failure. -jak
13:25 bo3-snk7-1.4 and bo7-rot3-1.4 just tripped to standby fault. -jak
13:45 The bo3-snk7-1.4 supply has been ramped to 100 amps. The bo7-rot3-1.4 rotator and the AGS H10 extraction septum have also been recovered. PHENIX is securing their plug door.

Cryogenics Log April 23, 2005:
10:09 YQ9 snake flow control output alarm (FE-5361). Manually increased flow and set back to auto. Alarm clear. -E.V
11:38 Blue and yellow Quench from top energy. No effect on cryo. -E.V
17:36 snake C2 pressure switch high. -E.V

QLI Recovery TAPE Start: **13:36:29** Link Recovered Time: **13:37:09** Estimated Down Time: **10** minutes
Quench Analysis: Undetermined
(Counter =Other)

Sunday-April 24, 2005: **PR-119, Yellow Quench: File# = 1114325173**
Permit ID: **4b-time.A** Timestamp: **02:46:12 +1897787** Beam Permit Fail Timestamp: **02:46:12 +1897788**
QPAControl / Timing Resolver: QP08-R4BYQF4-yo4-qf6-qp, Fan Fault
Quench Detector(s) Trip: All tripped indicating Positive Tq values.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): Beam dumped in Sector 9 and 10 appears normal.
Main Magnet Power Status: At Store Energy, YDMC = 1946.41 amps, YQMC = 1880.21 amps
Supplies tripped prior to T=zero as indicated on Qdplots: YDMC = 1944.58 amps, YQMC = 1848.87 amps.

Technical Notes / Sequence of Events: The Yellow Link tripped because of a Fan Fault on yo4-qf6-qpa and CAS had to swap out the unit with another on, s/n 01057. *G Heppner*

Physics / MCR Logs: Apr-24-2005 02:43 RHIC acceleration ramp started, ramp id pp23_1114319684 -Sequencer
Apr-24-2005 02:46 Beam Abort, 4b-time.A dropped Yellow Quench -Sequencer
Apr-24-2005 04:15 Don informs us that he will ask the CAS crew to replace the entire QPA.
Apr-24-2005 04:35, yo4-qf6-qp fan fault. CAS has instructions and they are replacing the qpa. -Don Bruno [yellow] [ps]
Apr-24-2005 04:40 CAS crew calls us to confirm that the quench link is down before the repair.
Apr-24-2005 05:55 CAS Crew stayed pass their shift and completed the QPA repair for yo4-qf6. They replaced the QPA chassis and called Don Bruno to inform. Don is running the quench recovery script.

QLI Recovery TAPE Start: **03:06:44** Link Recovered Time: User Exit, qdprocess.4b-qd2 tripped.
Quench Analysis: Fan Fault, QPA yo4-qf6-qpa
(Counter = QPA Fault)

Sunday-April 24, 2005: **PR-120, Yellow Quench: File# = 1114338332**
Permit ID: **4b-time.A** Timestamp: **06:25:32 +316767** Beam Permit Fail Timestamp: **06:25:32 +316768**
QPAControl / Timing Resolver: No faults indicated, QP03-R4BYQF2-yi3-qd2-qp first to indicate.
Quench Detector(s) Trip: All tripped indicating Positive Tq values.
5 Minute: Quench Delay File: No indications, All Systems running.
Beam Loss Monitors (Rads/Hr): No beam in the machine.
Main Magnet Power Status: Zero Current, y-dmain-ps, Reg PLL, Reg Watchdog
Other Fault that indicate the Control Power had been turned off: Fault, In Cur 1, In Cur 2, Out Cur 1, Out Cur 2, Out Ripple, Contactor, AC Under Volt, DC Out Cur, DC Out Over Volt, SCR Bank 1 Fuse, SCR Bank 2 Fuse, SCR Temp Warn, SCR Overtemp Trip, Rect 1 Xfmr Overtemp, Rect 2 Xfmr Overtemp, Interphase Xfmr Overtemp, Cabinet Overtemp, Airflow, Door Open

Technical Notes / Sequence of Events: TAPE had to be aborted due to a y-dmain-ps Reg PLL and Reg Watchdog fault. Somehow it would appear that the control power to the Yellow Main Dipole Power Supply had been shut off. The procedure to swap out a QPA for a quad magnet does not require one to turn off the Dipole Main Breakers or Control Power. Either case, by looking at all the Alarm faults indicated; a "C" Run should have been initiated in order to restore the regulator. Unknown as to how this happened, the Counter will indicate "Other" for this cause. *G Heppner*

Physics / MCR Logs:
Apr-24-2005 06:28 I had to drop the link because I had a problem bringing it up. This message from QDAnalyze is wrong again. Still needs to be looked at. Bringing the yellow link up again. -Don Bruno [yellow] [ps]
Apr-24-2005 06:48 Yellow link is back up and RHIC p.s.'s are handed back to MCR. -Don Bruno [yellow] [ps]

QLI Recovery TAPE Start: **06:04:21** Link Recovered Time: User Exit, Yellow Main Dipole not running up.
QLI Recovery TAPE Start: **06:26:27** Link Recovered Time: **06:45:15** Estimated Down Time: **239** minutes

RHIC Physics fy05 Run
Daily Quench Analysis for the month of April 2005

Quench Analysis: Yellow Main Dipole, Control Power had been turned off, Required "C" Run
(Counter = Other)

***Wednesday-April 27, 2005*: PR-121, Blue Quench: File# = 1114646630**
Permit ID: **11b-ps1 (In the Pink)** Timestamp: **20:03:48** Beam Permit Fail Timestamp: **20:03:48 +2342577**
QPAControl / Timing Resolver: N/A
Quench Detector(s) Trip: all tripped indicating Positive Tq Values.
DX Heaters: No indications that they fired, all in the Ready State.
5 Minute: Quench Delay File: No indications, all systems running
Beam Loss Monitors (Rads/Hr): Dump Stations 9 and 10 appear as parasitic beam near the dump area. (No beam in the machine)
Main Magnet Power Status: No outstanding faults indicated, BDMC = 473.16 amps, BQMC = 453. 57 amps

QLI Recovery TAPE Start: **23:12:17** Link Recovered Time: **23:23:48** Estimated Down Time: **200** minutes
Quench Analysis: Site Wide Power Dip, Thunderstorm
(Counter = Power Dip)

***Wednesday-April 27, 2005*: PR-121, Yellow Quench: File# = 1114646630**
Permit ID: **11b-ps1 (In the Pink)** Timestamp: **20:03:48** Beam Permit Fail Timestamp: **20:03:48 +2342577**
QPAControl / Timing Resolver: N/A
Quench Detector(s) Trip: all tripped indicating Positive Tq Values.
5 Minute: Quench Delay File: No indications, all systems running
Beam Loss Monitors (Rads/Hr): Dump Stations 9 and 10 appear as parasitic beam near the dump area. (No beam in the machine)
Main Magnet Power Status: No outstanding faults indicated, YDMC = 473.17 amps, BQMC = 454.40 amps

Technical Notes / Sequence of Events: Wfgman Archive: Blue and Yellow indicate Reference at Injection, all supplies tripped at that point. Postmortem Files for Power Supplies not available at the time of this report. The facility encountered a major power dip due to a quick passing thunderstorm front dropping both links at Injection Current. *G Heppner*

Physics / MCR Logs: Apr-28-2005 01:40 Summary:
NSRL physics ran for 2.87 hours during this shift. BLIP ran 6.08 hours during this shift. RHIC physics was severely hampered by Cryo lead flow interlocks and a series of severe power dips that disabled the entire accelerator complex. These problems were aggravated by severe weather conditions that occasioned implementation of the severe weather shutdown after conferring with J. Sandberg and C. Montag. As of the end of the shift, work continues to recover the Cryo lead flow interlocks.

Cryo-Log:
20:48 POWER DIP-Refrigerator supply flow swinging from 90 to 750 g/s, circulator flows from 0 to 160 g/s. Re-cooler levels low in most sextants. Will call MCR when machine is stable.
Lead flow investigation still on going. - jb
21:56 YQ9 snake flow control output alarm (FE-5361). Manually increased the flow and set back to auto mode. Alarm cleared. - jb
21:59 Informed MCR that refrigerator is stable but we still has a lead flow issue. – jb

QLI Recovery TAPE Start: **23:24:52** Link Recovered Time: **23:32:23** Estimated Down Time: **210** minutes
Quench Analysis: Site Wide Power Dip, Thunderstorm
(Counter = Power Dip)

***Wednesday-April 27, 2005:* SQ-006; Snake / Spin Quench Identified, All: Facility Power Dip**
Timestamp: **20:03:48** Beam Permit Fail Timestamp: **20:03:48 +2342577**)

Operating Currents Qdplots:

Alcove 3C:
Bo3-snk7-1.4 = 99.77 amps Q
Bo3-snk7-2.3 = 323.19 amps Q
Yi3-snk7-1.4 = 97.87 amps Q
Yi3-snk7-2.3 = 322.82 amps Q

Alcove 5C:
Bi5-rot3-1.4 = 2.99 amps
Bi5-rot3-2.3 = 2.95 amps
Yo5-rot3-1.4 = 6.48 amps
Yo5-rot3-2.3 = 2.78 amps

Alcove 7A:
Bo6-rot3-1.4`= 3.15 amps
Bo6-rot3-2.3 = 3.15 amps
Yi6-rot3-1,4 = 3.21 amps
Yi6-rot3-2.3 = 2.77 amps

Alcove 7C:
Bo7-rot3-1.4 = 3.16 amps
Bo7-rot3-2.3 = 3.19 amps
Yi7-rot3-1.4 = 2.95 amps
Yi7-rot3-2.3 = 3.05 amps

Alcove 9A:
Bi8-rot3-1.4 = 2.97 amps
Bi8-rot3-2.3= N/A
Yo8-rot3-1.4 = N/A
Yo8- rot3-2.3 = 2.74 amps

Alcove 9C:
Bi9-snk7-1.4 = 99.88 amps Q
Bi9-snk7-2.3 = 323.32 amps Q
Yo9-snk7-1.4 = 98.20 amps Q
Yo9-snk7-2.3 = 324.32 amps Q

Technical Notes / Sequence of Events: Wfgman Archive: Blue and Yellow indicate Reference at Injection, all supplies tripped at that point. Postmortem Files for Power Supplies not available at the time of this report. The facility encountered a major power dip due to a quick passing thunderstorm front dropping both links at Injection Current. All eight (8) Snake magnets quenched while at operating currents. Bi8-rot3-2.3 and yo8-rot3-1.4 did not register on Qdplots nor Snapshot. Only bo3-snk7-1.4-ps, yi3-snk7-2.3-ps indicated AC Phase Fault. *G Heppner*

Physics / MCR Logs: Apr-28-2005 01:40 Summary:
NSRL physics ran for 2.87 hours during this shift. BLIP ran 6.08 hours during this shift. RHIC physics was severely hampered by Cryo lead flow interlocks and a series of severe power dips that disabled the entire accelerator complex. These problems were aggravated by severe weather conditions that occasioned implementation of the severe weather shutdown after conferring with J. Sandberg and C. Montag. As of the end of the shift, work continues to recover the Cryo lead flow interlocks.

Cryo-Log:
20:48 POWER DIP-Refrigerator supply flow swinging from 90 to 750 g/s, circulator flows from 0 to 160 g/s. Re-cooler levels low in most sextants. Will call MCR when machine is stable.
Lead flow investigation still on going. - jb
21:56 YQ9 snake flow control output alarm (FE-5361). Manually increased the flow and set back to auto mode. Alarm cleared. - jb
21:59 Informed MCR that refrigerator is stable but we still has a lead flow issue. – jb

QLI Recovery (ALL) TAPE Start: **00:45:30** Link Recovered (ALL)Time: **01:14:41**
(TOTAL) Estimated Down Time: **312** minutes

Quench Analysis: Site Wide Power Dip, Thunderstorm
(Counter = Power Dip)